

# **PROGRESS REPORT**

**GRANT NUMBER: 7310071**

**4/1/2017 – 6/30/2017**

**Arctic Field Testing and Power Curve Verification of the  
Eocycle 25/12 Wind Turbine**



**Deliverables Submitted this reporting period****Grant Budget      Expended      Remaining**

\$ 348,300.00      \$ 339,843.04, including in-kind      \$8,456.96

**Running Schedule Status**

- Turbine has arrived in Kotzebue 9/29/2013.
- Moved to KEA pad for assembly 10/2/2013.
- Pad installation 10/8/2013.
- Eocycle personal at site for commissioning by the 28<sup>th</sup> October- 15<sup>th</sup> November
- Anticipated repair/and adjustment date 7/15/2014
- KEA recd and installed ladder and platform on Eocycle tower
- KEA changed out ultrasonic wind sensor.
- KEA replenished hydraulic brake reservoir.
- Eocycle running on Sep 18 2014
- Overspeed condition detected on Saturday September 20<sup>th</sup>.
- Blade tied off to tower on Sunday Sep. 21<sup>st</sup>.
- Eocycle personal in Kotzebue for repair of drive and clutch 6<sup>th</sup> -17<sup>th</sup> October.
- Repair and commissioning complete 1 Nov 2014
- Eocycle has a rotor brake system malfunction 1/28/2015
- February 10, 2015- Brake hydraulic system refilled. Leak evident.
- March 15<sup>th</sup>, 2015- Brake hydraulic system continues to leak, waiting for a good day to inspect.
- April-May Due to scheduling issues and weather, no good time was available for repair.
- June 9<sup>th</sup> Turbine operational,, restarted by KEA.
- Maintenance agreement signed between KEA and NAB for 1 year of service
- Scheduled maintenance for 1 Aug 2015, Eocycle to send replacement parts.
- Maintenance parts arrived as of 18Aug. scheduled parts replacement 25<sup>th</sup> ..
- Repairs completed 25<sup>th</sup> Aug.
- Wind event shut down the turbine 31<sup>st</sup> Aug.
- Tech support and parts replacement negotiated with Eocycle.
- Parts replacement scheduled for 15<sup>th</sup> Oct. delayed,, hopefully work will be completed by 10/20/2015
- Turbine has been repaired and is operational as of 13 May 2016.
- May 2016 – Eocycle technician replaced rotor/gen coupling and brakes. Eocycle back in service.
- Normal operation June-25<sup>th</sup> October 2016.
- October 25, 2016 – VFD cable burned inside control cabinet which damaged contactor. KEA Repaired.
- Met tower completed 25th Oct. but not commissioned.
- November 2016 -Eocycle shut down by KEA due to impending storms and overdue inspection of rotor/gen coupling. Eocycle required KEA to perform the inspection or be responsible if any damage occurred because of the lack of an inspection. KEA had larger problems to deal with at the diesel plant.
- Winter 2016-17-Due to winter storms no timeslot was found during the winter to adequately service the turbine.
- April 10th 2017 Road to turbine site finally opened.

**Percent Complete**

Tasks/Milestones	Start Date	End Date	Percent Complete
1. Foundation and electrical design	3/1/13	8/20/13	100%
2. Procurement and delivery	3/1/13	9/29/13	100%
3. Foundation work BBFM	7/1/13	10/2/13	100%
4. Install electrical and SCADA	8/1/13	11/15/13	100%
5. Move and update MET tower	6/1/13	10/25/2016	90%
6. Installation and commissioning	10/23/13	8/1/14	100%
7. Operation and monitoring	11/1/13	6/30/17	100%
8. Data analysis and draft project report	3/1/13	6/30/17	100%
9. Final project report		6/30/17	100%

**Work Progress**

Work that was performed in this reporting period:

- April 14th 2017, Turbine back in operation after inspection and maintenance event.
- April 14- June 30th, Turbine operating correctly and efficiently
- Some communication problems occurred together with some icing events.
- Data monitoring and Final report preparation.

**Future Work**

- Data monitoring

**Possible negative impacts:**

- None except weather

**Data collection and analysis:**

- Data collection ongoing
- Analysis of operation and Power curve complete

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